

1792A  
EA-02-13  
Greenleaf Creek  
Aquatic Project

April 17, 2002

Concerned Citizen,

The Coast Range Resource Area of the Eugene District Bureau of Land Management has completed the Environmental Assessment (EA) and Preliminary Finding of No Significant (FONSI) for the Greenleaf Creek Aquatic Habitat Improvement Project. The proposed project area is located in Sections 27 and 35, T. 16 S., R. 8 W., Will. Mer.

You have expressed an interest in receiving copies of Environmental Assessments for district projects. Enclosed is a copy of the Environmental Assessment for your review and any comments. Public notice of this proposed action will be published in the Eugene Register Guard on April 17, 2002. The EA will also be available on the internet at <http://www.edo.or.blm.gov/nepa>. The public comment period will end on May 2, 2002. Please submit comments to me at the district office, by mail or by e-mail at [OR090mb@or.blm.gov](mailto:OR090mb@or.blm.gov) by close of business (4:15 p.m.) on or prior to May 2, 2002. If you have any questions concerning this proposal, please feel free to call Leo Poole at 683-6289.

Comments, including names and street addresses of respondents, will be available for public review at the district office, 2890 Chad Drive, Eugene, Oregon during regular business hours (7:45 a.m. to 4:15 p.m.), Monday through Friday, except holidays, and may be published as part of the EA or other related documents. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Sincerely,

Steven A. Calish  
Field Manager

Enclosure

**U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT  
EUGENE DISTRICT  
GREENLEAF CREEK AQUATIC HABITAT  
RESTORATION PLAN**

**ENVIRONMENTAL ASSESSMENT No. OR090-EA-02-13**

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**I. INTRODUCTION**

**A. PURPOSE AND NEED**

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Greenleaf Creek is a larger fifth order tributary of Lake Creek (a Siuslaw River tributary) with origins located in the Central Coast Range, Western Lane County, Oregon. The head waters begin in T16S, R8W, Sections 1-3, 9-11. Greenleaf Creek flows from the north out of the Elk Mountain and Windy Peak prominences south to it's confluence with Lake Creek in T16S, R8W, Section 2. Harvesting of timber resources, agriculture and human settlement and related habitat alteration and harvests of fish have led to fish runs that number a fraction of their original size in the Siuslaw River and Lake Creek basins. Stream habitat for chinook, coho and steelhead in the lower reaches of Greenleaf Creek have been degraded or reduced in number in response to recent human management. The purpose of this restoration plan as related to the Aquatic Conservation Strategy objectives (ASC) is to improve the quality and quantity of appropriate habitats in the lower stream reaches of the Greenleaf Creek drainage and to restore spatial and temporal connectivity in an unnamed tributary with barrier culverts to benefit all fish species, other aquatic organisms, riparian plant communities, and wildlife species found here. The site specific analysis of future restoration proposals described herein would be tiered to this document.

**B. CONFORMANCE**

The proposed action and alternatives are in conformance with the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl, April 1994 (ROD)* , and the *Eugene District Record of Decision and Resource Management Plan, June 1995 (Eugene District ROD/RMP)* as amended by the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines, USDA Forest Service and USDI Bureau of Land Management, January 2001*. The analysis contained in these Environmental Impact Statements (EIS's) are incorporated into this document by reference.

The Proposed Action is in conformance with the Aquatic Conservation Strategy in the Northwest Forest Plan. Information summarized in the Greenleaf Creek Aquatic and Riparian Habitat Restoration Plan is from the Eugene District Lake Creek Watershed Analysis (June 1995). Information and analysis are also tiered to the Eugene District Lake Creek Aquatic Habitat

Management Plan and Environmental Assessment (LCAHMP) OR090-EA-00-20.

The Proposed Action and Alternatives (except the no action) are consistent with management triggers and criteria identified in Table 7 of the Late Successional Reserve Assessment, Oregon Coast Province - Southern Portion (R0267, R0268), June 1997.

The Proposed Action will follow general conditions related to fill removal activities as listed in permit (FP-23692) issued by the Oregon Department of State Lands (June 19, 2001).

## **II. ISSUES SELECTED FOR ANALYSIS**

**Issue 1:** Would the proposed stream enhancement affect the attainment of the Aquatic Conservation Strategy (ACS) objectives?

**Issue 2:** What are the effects on Special Status Species as a result of the proposed action?

**Issue 3:** How would the proposed action affect Late Successional Reserve (LSR) and Riparian Reserve (RR) objectives?

**Issue 4:** How would the removal and or replacement of the two culverts in road 16-8-35, in T16S R8W Section 35, effect neighboring private land owners?

## **III. PROPOSED ACTION AND ALTERNATIVES**

### **A. PROPOSED ACTION**

The Proposed Action includes five general categories of work. One or more activities may be performed at each of the project locations over a period of six years.

#### **1. Culvert Rehabilitation**

Culverts may create barriers to the movements of anadromous fish and other aquatic species, and contribute to modifications in natural hydrologic processes that may create flood and erosion hazards. Four types of rehabilitation are proposed in the Greenleaf Creek Basin:

- a. Removal. Culverts are removed and not replaced. The removal involves digging out and lifting the culvert. The channel where the culvert is removed is shaped and stabilized to reduce the potential for erosion.
- b. Replacement. The existing culvert is removed by digging out and lifting from its location in the streambed. The culvert is replaced with another culvert or a half-arch. The type of replacement and size would depend upon the existing substrates, flows at the site and the need to provide for movement of anadromous fish and aquatic organisms up and downstream.

Additional excavation may be needed to accommodate a larger structure or a structure of a different type. Excavated areas would be stabilized and protection provided to reduce the potential for erosion.

c. Improved access. For culverts creating a barrier to movements of anadromous fish and other aquatic organisms, and where removal or replacements are not feasible, access to the culvert may be created or improved by placement of structural material in the channel. This structural material would be primarily logs and boulders placed to elevate the stream channel and create pools to facilitate movement into the culvert. Short-term disturbance of the stream channel and stream bank may occur as a result of accessing the channel with equipment and materials, and from working within the stream channel.

d. Improved culvert passage. When culverts are too steep to permit passage and either replacement or removals are not feasible, passage through the culvert may be facilitated by placement of baffles, weirs, or similar type structures in the culvert. This breaks up velocity barriers and provides resting places for fish and other aquatic organisms.

From July 1 through September 15, during project year three (see table 1), a culvert removal/replacement project is proposed to occur in the Greenleaf Creek drainage, on an unnamed tributary that flows from the northeast 1/4 of section 35 to the south west 1/4 (confluence with the Greenleaf Creek mainstem) under the 16-8-35.1 road. The project site is denoted on map 1 provided in the appendix. The map is titled “Greenleaf Creek Culvert Project 1” and is listed as T16S, R8W, Section 35. This culvert is a low flow migration barrier to salmonids and an all flow barrier to most other aquatic organisms (see photos 1 and 2). Fish presence (cutthroat trout and cottid species) was detected above this barrier culvert. A site survey conducted in October 2001 showed juvenile coho salmon directly below this culvert.

Table 1. Proposed Projects, locations and estimated time lines.

Proposed Project	Location	Est. implementation date
Instream restoration	T16S, R8W, Sections 27 and 35	Project year 1
Culvert 1 removal/replacement	T16S, R8W, Section 35	Project year 3
Private logging and road work	T16S, R8W, Sections 26 and 35	Project years 1- 5
Culverts 2-3 removal/replacement	T16S, R8W, Section 35	Project years 6-7

The Culvert 1 removal/replacement project would be placed at or below current stream grade (if below - by up to two feet). To simulate a natural stream bottom, this culvert maybe filled with cobble/rubble sized substrates after placement. A supplemental jump weir could be installed below this passage during the culvert installation phase or in years following if future grade adjustments related to aquatic organism passage are found to be necessary. During the installation phase, identified barrow sites would be used to temporarily store existing fill adjacent to the old culvert. Barrow site fill will be replaced around the new culvert placement.

During project years 6 or 7 (see table 1) two culvert removals (identified here as Culverts 2 and 3) are proposed to occur in the same unnamed drainage, upstream of the project year 3 replacement (see map 1). The State of Oregon currently owns the head waters of an unnamed tributary (southwestern quarter of T16S, R8W, Section 26) that flows through barrier culvert 3 (under road 16-8-35). The head waters of the main unnamed tributary flow from lands owned by the John Hancock Company (JHC) in the southeastern quarter of T16S, R8W, Section 26. The JHC plans logging related activities here, from the present to possibly 2006 or 2007. Barrier culvert number 2 (photos 3 and 4) is located below culvert 3 (photos 5 and 6) in the watershed, on BLM lands and is also located under road 16-8-35. Currently, the JHC would like to exercise its Reciprocal Road Use and Right of Way Agreement (E-806) rights to keep the 16-8-35 road open for their proposed logging operations and would consider the BLM road closure proposal after their logging here is completed. If the JHC wished to maintain access to their lands in Section 26 on road 16-8-35 after logging operations were completed, then the BLM would propose to remove and replace the barrier pipes as stated in the Proposed Action item "1.b."

During a January 30, 2001 survey of the barrier culvert sites, salmonid fish species were observed above the influent (up stream) ends of both pipes.

## 2. Channel Structure

Channel structuring involves placement of materials in the channel to raise the channel elevations and to increase the complexity of habitat in the channel. Materials used in this process are primarily logs, boulders, stumps, rock and gravel. Designs are based on existing structural features occurring naturally in the system, and on structures previously developed by the Eugene District, other BLM Districts, or other agencies. Proposed structures are designed to be specific to a location, and take into account existing channel and riparian features. Proposed placements would occur between July 1 and September 15, 2002 (project year 1) in stream reaches of T16S, R8W, Sections 27 and 35.

Off site materials may be delivered to designated project sites well in advance of project work and stockpiled at the project site; or they may be delivered to the site at the time they will be used, reducing the need for stockpiling and handling.

Creation of structural features utilizes some hand work, but primarily involves use of heavy equipment to deliver and place the materials. Once in place, the larger structural materials are

generally anchored to the substrate using cables and epoxy. Smaller logs, rock and gravel may be allowed to move in response to the current. Because of the lack of retention features, many of the materials, particularly logs and stumps, would move out of the river system if not anchored. Once anchored, they create collection points to retain placed material or materials entering the channel from adjoining slopes. The use of heavy equipment is proposed for moving and placing the structural materials. Materials for most project work would be delivered to the channel and placed in position in the channel using spiders (walking excavators), excavators, front end loaders or similar equipment. Temporary access is generally created from existing roads through the riparian area to the channel. Most access routes would be less than 200 feet in length, and are generally located in areas where riparian vegetation restoration is planned, and may be sub-soiled after project work is completed to create planting sites. The development and rehabilitation of the access routes are designed to reduce the potential for erosion and channel disturbance, and in many locations utilize existing older roads and accesses.

Several types of channel structures are proposed. The structures are placed in combinations in and along the channel. Design depends upon the existing conditions and potential of the site. The following descriptions are for the general types of structures used:

- a. Weirs. Weirs are full-spanning structures of logs, boulders and/or stumps. They extend up the bank to protect against erosion around the end of the weir. The height and length depend on the individual site conditions.
- b. Jetties. Jetties are structures of boulders, logs and/or stumps extending from the bank into the channel but not spanning the channel. They are designed to redirect flow and to create diverse habitats along the margins of the channel.
- c. Ramp logs. Ramp logs are logs with one end up on the bank and the other end extending into the channel. They function similarly to jetties.
- d. Log and boulder placement. Individual or clusters of logs, boulders, and/or stumps are placed in the channel in various positions to break up flows, create small islands, and increase habitat diversity.
- e. Gravel placement. Although natural gravel delivery is not a limiting factor to the stream channel, gravels may be placed in the channel, below and above culvert replacement sites to facilitate development of salmonid spawning and insect production (fish food) areas. Gravel is usually placed in the channel above the locations where it is needed, and the current is used to distribute the gravel to the structures. However, a stone slinger could be used to deliver gravels directly to a specific project site.

### 3. Riparian Restoration

The purpose of riparian restoration is to increase the percentage of conifers in the riparian area as a future source of large woody material in the channel, and snags and woody debris in the riparian area. Within the first three stream reaches (ODFW 1999) of Greenleaf Creek, many of the riparian zones are currently dominated by red alder, with some big leaf maple and mixed-age conifers. Restoration efforts are planned primarily for the red alder-dominated communities.

Adjacent to the first project stream reach is a small tree farm, recently acquired by the BLM, that has grown beyond the Christmas tree size. Recent stand analysis has show that this stand will likely not function as either a Late Successional Reserve or Riparian reserve due to the genetic make up of off site genetic stock and past management of multiple prunings. This stock shows off site characteristics which include: big diameter, full crown and short tree height. The recommendation of stand replacement will be addressed in a separate environmental assessment. In areas adjacent to the active channel thinning is proposed to speed the development of potential, recruitable large trees as woody debris for Greenleaf Creek and associated riparian areas. The proposed thinning would help restore the diversity and complexity of habitat necessary for riparian plant and wildlife communities here.

In developing accesses from existing roads into the stream channels, routes are selected that facilitate riparian restoration. Red alder and some small Douglas fir trees (through the tree farm) along the access routes are removed, with the downed trees placed in nearby riparian areas or in the stream channel. Once the stream channel project work is completed, the access routes may be subsoiled to create suitable conditions for planting of trees. Additional red alder may be removed in patches adjoining or away from the access routes to reduce shading in planting sites. Brush may be removed from additional adjoining sites. The sites where trees and brush are removed away from the access routes are not usually subsoiled. Trees are felled using chain saws or other hand equipment, or are girdled and allowed to die and fall over time, or felled using heavy equipment (i.e., excavator). Brush is generally removed in areas where trees are felled or girdled. Conifers and larger big leaf maple are preserved wherever possible. Where younger conifers are present, competing vegetation may be removed to release conifers and speed up structural development. Conifer plantations may be thinned to generate variable spacing, species diversity and maximize growth of recruitable conifers along the stream channel.

During the subsequent planting season, usually the winter months following site preparation, trees are planted in the prepared locations. Species for planting include Douglas-fir, western redcedar and western hemlock, depending on the site conditions and proposed species mix. Trees are generally tubed to reduce browsing. Competing vegetation is controlled by placing mats around the trees and/or by brushing during subsequent years.

#### 4. Road Stabilization

Several options are identified for addressing problems to the aquatic system created by roads. The road network that extends throughout the Greenleaf Creek drainage project area is managed by BLM and private owners. Frequently multiple users have rights of way on existing roads. Options for addressing problems in the aquatic system due to roads depend upon decisions made cooperatively by the agencies, companies and individuals that control or use a particular road segment. Options identified for road rehabilitation include:

- a. Surfacing of roads. Roads, particularly those used in wetter periods, may be surfaced with rock or paved to reduce the potential for silt entering the aquatic system.
- b. Improved drainage. In addition to modifying culverts, drainage may be improved by water-barring, providing sub-surface drains, improving ditching, or other steps that would reduce erosion hazard, reduce water interception, and reduce hazards for slope and fill failure. Road cuts and fills may be treated to reduce erosion and potential for slumping.
- c. Limit access. Access may be restricted to limit the types of activities, and times of the year when vehicle travel may be permitted. This may be done by using signing, gating (current management), barriers, administrative limitations, or other methods.
- d. Road closure. Roads may be barricaded to limit or eliminate traffic, subsoiled and planted, or reshaped by moving road fill so that the land surface more closely resembles natural contours. To reestablish natural drainage patterns roads may be bladed so that the existing gravel lift is moved into the ditch line and concentrated flows are reduced. Water bars, rolling dips and the out sloping of the road prism would direct surface water to the forest floor. As mentioned in the proposed action, under culvert rehabilitation, culverts and cross drains would be removed as part of closing Road 16-8-35. Drain dips would be established at the cross drain removal locations and stream bank slopes and channels would be reestablished at the stream locations where culverts are removed and not replaced. Vegetation removed during the riparian conversion process may be placed on the road to provide slash and organic debris to the mineral soil and as a filter strip designed as sediment barriers.

#### 5. Monitoring

Prior to implementation of culvert replacement work, additional sampling to estimate current juvenile salmonid, other fish species populations and amphibian presence may be conducted in selected habitats using seining/electrofishing. Reference macroinvertebrate samples may also be collected at some sites above the barrier culverts prior to replacement.

## **B. ALTERNATIVE 2 - Restoration with No Removal of Culverts Two and Three**

Alternative 2 would be similar to the Proposed Action except that the potential removal and or replacement of Culverts 2 and 3 in Section 35 would not be considered for implementation.

## **C. ALTERNATIVE 3 - No Action**

Under a No Action Alternative, no additional actions would be taken to increase stream structure, replace culverts, restore riparian areas or stabilize roads. Culvert and road work already occur as part of the district road maintenance program. However, the emphasis would be on road stability and not on assisting with recovery of the aquatic system and its associated fauna. Under the No Action alternative, no stream channel restoration would be done, and riparian restoration would be primarily associated with vegetation manipulation carried out for other purposes. Both the stream and riparian habitats would be expected to show only very gradual recovery over a much longer period of time as a result of management actions taken under this alternative.

## **D. ALTERNATIVES CONSIDERED But not Analyzed**

1. Log Supply. This alternative is similar to the Proposed Action for supply and delivery of needed stream logs, but differs in that in addition to off site materials being used for instream restoration, on site trees located to the east of Road 16-8-35.1 in Sections 27 and 35, would be pulled out of the ground and transported to the stream channel using heavy equipment. In Section 27, standing mature and or old growth Douglas fir trees would be selected and pulled out of the ground with roots attached using heavy equipment. Pulled trees would then be cabled down hill to in-channel project locations for placement. In Section 35, live Douglas fir trees (pole-young vegetation class) would be pulled from the ground using an excavator and transported to the Greenleaf Creek project area as woody debris. Section 27 field review showed that this alternative (from a wildlife perspective) would be acceptable for removal of smaller diameter trees, but that the larger diameter trees would potentially degrade critical habitat for murrelets and spotted owls. The extraction of smaller diameter trees was found to be unacceptable for in-channel use (from a fisheries standpoint) as these trees don't have the length and weight to remain in the channel as "key pieces." Similar to the available trees in Section 27, the trees available for removal in Section 35 were found to be too small for the proposed instream structural placements as planned.

2. Stream Restoration with horses. This method was considered as a low impact alternative to heavy equipment. Past experience with this method has shown that horses are not capable of pulling and placing the size of logs proposed for this project.

3. Stream Restoration with helicopter. This method was considered as a low impact alternative to using heavy equipment as related to ground disturbance and stream restoration. Since it was known that planned log weights would exceed helicopter lifting limits and that helicopters have an inability to effectively place boulders, this alternative was not addressed further.

#### IV. EXISTING CONDITIONS

##### A. GENERAL SETTING

As documented in the Lake Creek Aquatic Habitat Management Plan (Armantrout 2000) Greenleaf Creek basin has more magmatic rock than other adjoining basins, which is reflected in the more confined valley floor and greater amount of boulder material. For a basin its size in the Coast Range, Greenleaf Creek is comparatively steep and confined. A major contributing factor is probably its location in one of the most active orogeny zones, as well as the presence of volcanic intrusive material. The stream flows through some of the more unstable terrain in the Coast Range, but does not have many recent mass movements. Visual observations suggest flows are more stable than in other streams, with reduced peak high and low flows.

During the Summer of 1999, the Eugene District BLM contracted with the Oregon Department of Fish and Wildlife to conduct extensive stream surveys in the Greenleaf Creek Basin (ODFW 1999). When comparing data from the 1999 stream survey and information presented in the LCAHMP (pre-1999 survey data) a noticeable increase in the percentage of pool habitat is seen in the Greenleaf Creek basin (see Table 2). Also of noted significance are the increases in the percentages of rapid and cascade habitats that have occurred in the recent past. When comparing pre-1999 survey data to current information a significant reduction in bedrock and increase in boulder composition is noted. Pre-1999 data showed bedrock comprising 18% of the substrate, with boulders making up nearly 17%. This reflects both the greater abundance of boulder material and the faster flows due to gradient and confinement. The 1999 basin wide data also shows a marked decrease in bedrock habitat to a 5% composition (down from 18%) and boulder increase to 25% (up from 17%) suggesting that large amounts of new depositional materials have been recently recruited into the stream channel and are being retained in previously degraded areas.

Table 2. Greenleaf Creek Habitat Survey Details

Pre and Post 1999 habitat surveys (percentage of total habitat)

Habitat Type	Pre 1999 BLM Survey	1999 ODFW Contract survey	1999 Survey of Proposed Project Reaches
POOLS	30	38	41
RAPIDS	10	20	18
CASCADES	10	20	18
BOULDERS	17	25	21
BEDROCK	18	5	7

Large woody debris is lacking along most of Greenleaf Creek, although there is some good structure, and potential for more, in those reaches where older trees are present. Timber management activities and the harvesting of cedars have reduced the potential for LWD in the near term, although riparian vegetation is recovering. Beaver activity is nearly absent in the lower reaches of Greenleaf Creek.

Within the proposed project reaches, recruitable conifer trees (30 meters from both sides of the active stream channel ) >20" and >35" dbh/1000 stream feet are in numbers (see Table 3) that rate a "Undesirable" condition according to benchmarks set by the ODFW in the Oregon Watershed Assessment Manual (Watershed Professionals Network, 1998). Of the three project stream reaches, only reach number 1 has the potential to reach the desirable number of potentially recruitable trees >300. The surveyed number of young conifer trees in reach number one was 427 trees /1000 stream feet, of which most were enumerated from an adjacent, abandoned Christmas tree plantation.

Table 3. Recruitable Riparian Conifers Surveyed. All information is for conifers/1000 feet surveyed on both sides of the stream channel and 30 meters into each riparian area.

Stream Reach	Total Conifers/1000 feet stream	Conifers>20" dbh/1000 stream feet	Conifers>35" dbh/1000 stream feet
1	427*	0	0
2	290	46	15
3	20	0	0
4	183	0	0
5	168	0	0

\* High numbers influenced by inclusion of old Christmas tree farm in survey.

It is likely that competition stress on this plantation will reduce the number of young trees here to levels that will not allow attainment of benchmark numbers for 20" and 35"dbh trees. Thinning or replacement of this plantation may be warranted to reduce competition, get these trees on an optimal growth trajectory and attempt to achieve a Late Successional pathway here. From the "undesirable" ratings for total conifer numbers surveyed, there is an apparent need for additional conifer tree planting in the proposed project reaches.

Below the Section 27/34 boundary line, Greenleaf Creek flows onto the Lake Creek flood plain. Here the valley floor widens and the gradient decreases. Most of the lower reaches were partly converted to pasture, and partly recently harvested. BLM acquired most of these lands in an exchange in 1997. Substrates on the floodplain are mostly gravel, with some reaches of excellent spawning material. Available spawning habitat has decreased in recent years due to a lack of structural material or key pieces of LWD to hold the gravels and possibly a reduction in the amount of replacement materials moving down Greenleaf Creek (see Table 4).

Table 4. Key Pieces of LWD. Information is from 1999 surveyed stream reaches and shows number of key pieces >0.6m diameter & ≥ 10m length/100m stream.

Reach	Number	Condition	Habitat Bench Mark Standard
1	0.5	Undesirable	<1 piece per 100m stream
2	0.8	Undesirable	<1 piece per 100m stream
3	1.2*	At Risk	>1 & <3 per 100m stream

\* Hardwoods make up 79% of the recruitable LWD here.

Riparian areas have a predominance of red alder, with big leaf maple and cedar being the other abundant riparian species. The riparian width is generally quite narrow for a stream the size of Greenleaf Creek, with some older conifer and hardwood trees. Just above the end of the road in Section 22 is an unusual grove of trees, with large, old growth conifers and some old maple and red alder. Above this grove, the riparian had many more cedar, but about 1980 a permit was issued to harvest the cedar. Most were cut down and sawed into shake bolts; these were never hauled out, although many have floated downstream over the years. Just above the forks in Section 15 there is a remnant old growth cedar grove, one of the very few remaining in western Oregon. Upstream areas have riparian communities of mixed conifer and hardwood, with an abundance of brush species. Non-native blackberry (Himalayan and evergreen) have established in project areas from road side locations to the streams edge. Scot's broom and Japanese knotweed have also been documented.

Chinook and coho salmon and steelhead and sea run cutthroat trout use Greenleaf Creek. Greenleaf is considered one of the best steelhead streams on the coast, and one of the few that probably had a good run of native steelhead prior to the arrival of settlers. At the present time, runs are stopped at a falls in Section 15 caused by a landslide that deposited logs and boulders in the channel. Upstream 1-2 miles is a natural falls that has blocked fish movement; a resident cutthroat trout population is present above this natural falls that was shown to have a unique genetic composition in tests run by the Coop Unit at Oregon State University. These isolated cutthroat also have an unusual color pattern, being very dark to almost black with golden spots along the side. The colors disappear quickly when the fish dies.

At one time coho and chinook salmon did not move upstream past where the road bridge is located in Section 22, although steelhead moved upstream to the first falls. Analysis suggested this was due to a series of bedrock chutes that, at high flows, became velocity barriers. The U.S. Marines in 1984 blasted 13 pools in the bedrock to improve passage; most are still present and functioning. Since that time, coho have been found above this area, but not chinook.

At the same time, two other downstream barriers were removed. One was on private land just below the cascades and tributary in the northern half of Section 34. A log jam had formed on a series of boulders and blocked passage at all but high flood flows, when a side channel opened up. A volunteer crew removed the jam. Two log jams were also located on public land in Section 27. Passage was opened through both of these jams, although part of a gill net was later discovered at

one of the openings. Since then, the log jams have gradually broken up and are no longer barriers. Passage is available up to the first falls, although the cascades, at the Section 34/27 line, remain a barrier except during higher flows.

Two sets of gabions were built in Greenleaf Creek in Section 27. One set was designed to move flow away from an actively eroding bank, the other to test a design to increase stream meander. Both gabions functioned well but did not survive more than a few years before breaking apart. Currently, a large alder jam occupies the gabion site at 16,315 stream feet.

Restoration activities are centered on increasing channel structure. Priority would be the recently acquired floodplain lands in Section 35. The stream in this reach has a history of excellent chinook and good steelhead spawning. One reason for declines in anadromous fish populations here is thought to be the loss of structure and gravels. Placement of boulder and log structures would be designed to again accumulate gravels. Access is limited above the bridge in Section 22, however several good potential project sites are present above this point near the sectional boundary. Targeted species would be steelhead, coho and the native cutthroat trout.

## **B. SPECIFIC RESOURCE DESCRIPTIONS**

### **Wildlife**\_\_\_\_\_

The proposed actions would be located on Bureau lands in T16S, R08W, Sections 27 and 35. Terrestrial habitat adjacent to the project sites consists of mixed Douglas fir/deciduous forest ranging from old-growth to young coniferous plantations. For a description of the riparian habitat, refer to part A (General Setting) of this section.

Land Use Allocation in these sections is Late Successional Reserve (LSR). These sections are also designated Critical Habitat Units (CHU) for both the marbled murrelet and northern spotted owl.

### Survey and Manage Species

Survey and Manage (S&M) mollusk species previously requiring surveys include the Oregon Megomphix (*Megomphix hemphilli*), papillose tailed dropper (*Prophysaon dubium*), and the blue-grey tailed dropper (*Prophysaon coeruleum*). These species have been removed from the S&M list in the Coast Range Resource Area (USDA & USDI, 2001), and no longer require pre-project surveys. Consequently, no such surveys for these species were conducted.

The red tree vole is a S&M arboreal rodent requiring pre-project surveys in areas where suitable habitat (SH) exists. Within the young plantation, there are a few scattered trees that may qualify as SH for these mammals.

### Threatened and Endangered Species

Two federal 100 acre spotted owl cores, one state 70 acre owl core and one marbled murrelet occupied site lie within 0.25 mile of the proposed action. Suitable habitat for these species exists within 0.25 mile of the proposed action area.

### Other Sensitive Species

Tailed frogs (a Bureau Assessment Species) have been documented within Greenleaf Creek in section 22. This frog is declining in many parts of the Northwest, particularly in Oregon's Coast Range, primarily because of habitat loss and degradation. This species requires cold water streams with little siltation and a cool, moist microclimate extending into the adjacent terrestrial portion of the riparian zone. Tailed frogs have not been documented within the proposed project area during recent surveys.

### Other Wildlife

Because of the diverse mosaic of habitats adjacent to the proposed action area, the wildlife community is also diverse. For a list of species potentially occurring in this vicinity, refer to the Eugene District's Resource management Plan (RMP) in table 3-54.

### **Botany**

Surveys for Special Status and Survey and Manage vascular plants were done during the 1999 field season that meet current protocols. No special status and survey and manage vascular plants were found. Surveys for Survey and Manage and Special Status bryophytes and lichens were done during the 2001 field season that meet current protocols. Three Survey and Manage lichen species requiring management were found in the proposed project area, *Ramalina thrausta*, *Cetrelia cetrariodes*, and *Plastismatia lacunosa*.

*Ramalina thrausta* is a Rare Lichen under component "A" species, and as such the BLM is required to manage all known sites and minimize inadvertent loss of undiscovered sites.

*Cetrelia cetrariodes* is a Component E species lichen species believed to be rare but not enough information is available to make an accurate determination of its rarity. This requires that all known sites be managed while determining if the taxon meets the basic criteria for Survey and Manage.

*Plastismatia lacunosa* is an uncommon Lichen under component "C" species, and as such the BLM is required to manage all known sites. The BLM is required to identify and manage high-priority sites to provide for reasonable assurance of the species' persistence. Very few sites of this species have been found on the Eugene District. At this point in time, all sites of this species should be managed.

## **Recreation**

Initiated by the BLM in 1998, the Greenleaf Creek riparian area adjacent to and through the Christmas tree farm in Section 35 has been used as an “educational area” for the Salmon Watch program. Annually, dozens of elementary and high school students visit this site to gain knowledge pertaining to native fish species, watershed conservation and environmental stewardship. A half mile long trail that has been routed through the tree farm and along Greenleaf Creek, provides access to sites for viewing spawning salmon, collecting water samples, macroinvertebrate sampling, stream channel assessment and observation of indigenous plants and animals.

## **Geology/Soils**

Greenleaf Creek is geologically mapped within the Flourney/Tyee Formation that consists of massive and rhythmically bedded feldspathic and micaceous sandstone and subordinate siltstone. Each bed is graded and ranges from coarse sandstone at the base to fine sandstone and siltstone above. Transecting the area are sheets, sills and dikes of mafic intrusions of basalt rock (Walker and Macleod, 1991).

High-risk sites for landslides exist in the Coast Range and because of the steep slopes along the Greenleaf drainage, many landslides have historically occurred. Inventories on BLM lands have identified some areas as potentially unstable based on field indicators and factor of safety modeling. These areas have been withdrawn from management activities using the Timber Production Capability Classification (TPCC) FGNW. Figure 2 identifies the TPCC areas within the Greenleaf drainage.

Air photo interpretation (1950) indicates that the lower half of Greenleaf Creek was harvested before 1950. Some landslides may have occurred during this time but high reflectance on the air photo, indicating disturbed soils, appears to be associated with logging. Some tributaries in the headwaters where logging had not taken place also show high reflectance and this may be the result of landslides/debris flows. There does not appear to be evidence of recent landslide activity in the 2000 air photo. However, the Greenleaf Creek drainage has steep slopes, which coupled with flood events and concentrated flows, could lead to the development of future unstable areas. Although landslides naturally provide in stream structure with gravels, cobbles, boulders and large wood, deforestation of headwalls have accelerated the frequency of landslides (Sessions, 1987) and removed productive soils. Therefore it is important that tree buffers be maintained in steep concave slope areas.

During field reconnaissance in July of 2001, it was noted that a good organic layer on the soil surface and vegetation obscures much of the previous soil disturbance.

## **Soils**

Soils in the area have developed from sedimentary rocks and are deep, permeable and productive. Site Index for the soils in the area ranges between 120 and 180 (USDA, 1987). This area is located within the udic-mesic moisture regime and is generally in the Bohannon-Digger-Preacher Soil Association. Typically, this map unit consists of 40% Bohannon soils, 25% Digger and 20%

Preacher. Some of the soil series associated with these soils include Peavine, Honeygrove, Klickitat and Blachly (see Map 4). Because permeability is rapid in many of the Coast Range soils, the soils tend to have rapid runoff and a high hazard of water erosion, particularly on steep slopes. Vegetation, slope, soil texture, soil infiltration rates and climate are the most important influences on the erosion hazards of a site and a variety of these combinations exist in the Coast Range and contribute to a naturally high background erosion rate. In general, background erosion rates are documented to be two to four times higher in the Coast Range than in the Cascade Range (Larson and Sidle, 1980).

The Bohanon soil series are loamy, very porous and depth to weathered bedrock ranges from 20 to 40 inches and is easily compacted. Digger soils range from shallow to moderately deep, are well-drained, loamy soils that are stony and porous. Preacher soils are loamy clays that are well drained, moderately permeable and easily compacted. The Honeygrove series are deep, red, well-drained, silty clay loams that are easily compacted. Depth to bedrock ranges between 60 to 100 inches. Klickitat soils are loamy, deep reddish brown, and typically are stony and cobbly. Depth to bedrock ranges from 40 to 60 inches. The Peavine series consists of moderately deep, well-drained, red, silty clay loam soils that are easily compacted, with depths to bedrock ranging from 40 to 50 inches. Blachly soils are clay loams with effective rooting depths to 60 inches and are easily compacted.

The soil temperatures remain warm and moist through late spring and early summer in the Coast Range and that favors the oxidation of the soluble form of iron, a basic constituent of the parent sandstone and intrusive rocks of the area. With high precipitation, excess amounts of moisture move through the soil profile removing soluble products of the weathering processes, but stranding the iron which produces soils in the area that are red, such as Honeygrove soils.

#### TPCC Designation

The Timber Productivity Classification Codes in the Greenleaf Creek area include FGNW, FSR/RLR, FWNW and RLR (Figure 2). FGNW = fragile-slope gradient withdrawn, FSR/RLR = fragile soils restricted withdrawn, FWNW = fragile-groundwater withdrawn and RLR = inadequate light. These categories are mapped in the area and provide guidance for timber management. The classes are an indication that problem reforestation could occur and additional site preparation and/or treatments could be necessary to achieve target stocking levels.

## **V. DIRECT OR INDIRECT EFFECTS**

### **A. UNAFFECTED RESOURCES**

The following resources are either not present or would not be adversely affected by the proposed action or any of the alternatives: Areas of Critical Environmental Concern, regional or local air quality, prime or unique farmlands, cultural resources, floodplains, environmental justice, native American religious concerns, hazardous or solid waste, wild and scenic rivers or wilderness. Water quality, riparian zones, and the habitat of the threatened coho salmon are expected to benefit from the proposed actions.

## B. EXPECTED IMPACTS

All proposed actions would require some short-term disturbance to the road right-of-way, riparian zone, or stream channel. All actions are in areas that have previously been disturbed by management activities. No new roads would be created as a result of the proposed actions, although temporary accesses would be needed for movement of equipment and materials from existing permanent roads to restoration sites in the stream channel.

Impacts include a transient increase in sediment from culvert removal/rehabilitation, road stabilization and channel structuring; a reduction in overstory and understory vegetation in riparian areas during riparian site preparation and planting, and potential disturbance of fishes, invertebrates, and aquatic communities in the stream channel during culvert rehabilitation and channel structuring.

The impacts to vegetative characteristics associated with individual fisheries structures are expected to be relatively low except in access routes used to move materials from roadways to the stream channel. Roading and tree yarding would result in soil disturbance and compaction, and would increase the likelihood of non-native and potentially noxious species entering and/or increasing in the project area. Surface soil disturbance may also result in disruption of soil dwelling fungal hyphae that play an important role in nutrient cycling and decomposition. Suggested botanical mitigation measures under the *Mitigating Measures* section (pg. 21-22) following should help alleviate the potential for the increase or spread of non-native species, and high levels of mycorrhizal disturbance.

As a result of the placement of structures in the stream, water surface levels would be raised at all flow levels. During peak flows more water would flow into riparian areas. Project designs limit the potential for erosion. The flooding of riparian areas provides a positive benefit for deposition of silts in riparian areas and increased groundwater infiltration. Previous stream projects that have raised water levels have resulted in an increase in wetlands in the adjoining riparian area. The projects are expected to contribute to an overall improvement in water quality and reduced flooding downstream.

## C. PROPOSED ACTION

### ISSUE 1: Effects on Attainment of ACS Objectives

To attain Aquatic Conservation Strategy (ACS) objectives within the proposed Riparian Reserves specific management actions that are consistent with the Lake Creek Watershed Analysis have been included in the Proposed Action. The following is a site specific analysis of the effects of the Proposed Action on the attainment of the ACS objectives:

**Objective 1:** The Proposed Action would maintain and contribute to the restoration of the distribution, diversity, and complexity of watershed and landscape features. The placement of structural materials in the channel will help to replace lost habitat necessary for all life cycles of salmonid and other indigenous aquatic species. Large woody debris (LWD) or key piece placements will help maintain future formations of back-water areas, deep rearing habitat

(pools), off-channel and high flow refuges, and key spawning habitats. In addition, key piece placements will provide locations for the collection of additional woody debris (jam formation) that lead to increased channel complexity. The proposed riparian action to increase the percentage of conifers in the riparian area would ensure future “bench mark” levels of large woody material in the channel, and snags and woody debris in the riparian area.

**Objective 2:** The Proposed Action would help restore the spatial and temporal connectivity within and between watersheds because of the proposed barrier culvert removal/replacements. Barrier removals will allow all aquatic species to move in an unobstructed fashion to and from species specific habitats in the watershed that have not been available for decades. In channel log and boulder placements will help to restore the connectivity of the stream channel with the riparian in areas that are currently channel confined and downcut. Restored areas of connectivity may once again function as water storage areas during critical low flow summer months, help reduce water temperatures and function as a water filter.

**Objective 3:** The Proposed Action would maintain and contribute to the restoration of the physical integrity of the aquatic systems. The addition of log and boulder structures to degraded stream reaches will help the aggregation process, particularly in areas of bedrock dominance. The addition of these structures will also slow high stream velocities that can lead to unwanted scour.

**Objective 4:** The Proposed Action would maintain the water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. In channel log and boulder placements would help to restore the connectivity of the stream channel with the riparian in areas that are currently channel confined and downcut. Restored areas of connectivity may once again function as water storage areas during critical low flow summer months, help reduce water temperatures and function as a water filter.

**Objective 5:** The Proposed Action would maintain and contribute to the restoration of the sediment regime under which this aquatic ecosystem evolved. Degraded habitats within the proposed project reaches lacking in channel structure that prevent normal capture and distribution of sediments would benefit from in stream structural placements. The movement of logs and boulders (during the summer months) from roadside staging areas to the stream channel could result in the short term production of a minor amount of sediment in the event of a summer rain storm, but would only have negligible, short term effects on the riparian. In addition, equipment operation would result in localized soil disturbance.

**Objective 6:** The Proposed Action would not have a negative effect on in-stream flows influencing the riparian, aquatic and wetland habitats in the proposed project area as related to retaining patterns of sediment, nutrient, and wood routing. Log and boulder placements will contribute to the slowing of stream flows and dissipation of stream energies associated with high flows in degraded habitat areas during periods of sediment transfer and deposition, help supply water to off channel wetland areas, and help to restore the connectivity of the stream channel with the riparian (recharge riparian aquifers) in areas that are currently channel confined and downcut. The extent of the effect on flow related to evapotranspiration and

interception and to removal of some hardwoods from and planting of young conifers (proposed riparian conversion) in the riparian is not certain but expected to be negligible.

**Objective 7:** The Proposed Action would maintain and contribute to the restoration of the timing, variability, and duration of floodplain inundation and water table elevation in wetlands. Within Reach 1 of the Proposed Action exists a cut off oxbow of the main channel that periodically charges with water and supports wetland associated vegetation. The proposed placement of structural materials should increase the amount and period of water storage in this wetland area.

**Objective 8:** The Proposed Action would contribute to the restoration of the species composition and structural diversity of plant communities and habitat to support well distributed populations of some riparian dependant species as related to requirements of riparian ground water storage, nutrient filtering, interaction between surface flows and ground water storage that create optimal soil moisture conditions for riparian vegetation. The proposed placement of structural materials should increase the amount and period of water storage in proposed project areas and help support riparian associated plant and animal communities. Thinning of vegetation competing with conifers in the Riparian Reserve would hasten the development of future supply of large woody debris, which would contribute to the restoration and maintenance of the aquatic system complexity and stability.

**Objective 9:** The Proposed Action would maintain and contribute to the restoration of habitat to support well-distributed populations of many riparian dependant species by providing an immediate supply of channel structure (log and boulder habitat) to the stream. The placement of structural materials in the channel will help to replace lost habitat necessary for all life cycles of salmonid and other indigenous aquatic species. Large woody debris (LWD) or key piece placements will help maintain future formations of back-water areas, deep rearing habitat (pools), off-channel and high flow refuges, and key spawning habitats. In addition, key piece placements will provide locations for the collection of additional woody debris (jam formation) that lead to increased channel complexity. The proposed riparian action to increase the percentage of conifers in the riparian area (adjacent to the stream channel) and future management of the tree farm would ensure future “bench mark” levels of large woody material in the channel, and snags and woody debris in the riparian area for associated, dependant wildlife species.

Based on the above analysis of the effect on attainment of the ACS objectives, the Proposed Action is consistent with the ACS and the objectives for the Riparian Reserves, and would not prevent or retard attainment of any of the ACS objectives.

## **ISSUE 2: Effects on Special Status Species**

### Survey and Manage Species

The red tree vole is a S&M arboreal rodent requiring pre-project surveys in areas where suitable habitat (SH) exists. Within the young plantation, there are a few scattered trees that may qualify as SH for these mammals. These trees would be surveyed according to current protocol prior to

any project implementation. Any nests documented during this effort would be protected according to current management recommendations.

Given that any future proposed actions occurring in the plantation are intended to enhance stand growth and diversity, these actions would be expected to benefit red tree voles in the future.

#### Threatened and Endangered Species

As mentioned in Section IV-B, there are three historic spotted owl sites and one site occupied by marbled murrelets within 0.25 mile of the proposed action. No habitat suitable for these species would be modified by this proposed action, but audio disturbance may have some affect to these species if they are nesting in the vicinity during project implementation.

This project is proposed to be implemented during the latter part of the nesting season (after August 6) to lessen disturbance impacts to spotted owls and murrelets. If any new nests of these species are discovered near enough to the proposed project area to cause concern for the safety of these birds, appropriate mitigation measures would be pursued to protect them.

No Bald Eagle Habitat Areas or known nest sites exist within 0.5 mile of the proposed action. No effects to this species are anticipated as a result of this proposed endeavor.

The Bureau will consult with the U.S. Fish and Wildlife Service (USFWS) regarding effects to the spotted owl, murrelet and bald eagle. Any mitigation measures required by the USFWS would be implemented.

#### Other Sensitive Species

Tailed frogs (a Bureau Assessment Species) require an assessment of a proposed project's potential impacts to that species' population. It is also classified as a List 2 Species by the Oregon Natural Heritage Program and as Vulnerable by the Oregon Department of Fish and Wildlife.

Tailed frogs have been documented within Greenleaf Creek, north of the proposed action area in section 22. This frog is declining in many parts of the Northwest, particularly in Oregon's Coast Range, primarily because of habitat loss and degradation. This species requires cold water streams with little siltation and a cool, moist microclimate extending into the adjacent terrestrial portion of the riparian zone where adults spend a portion of their time.

There are no documented tailed frog sites within the project area, but it is reasonable to assume they are present since their tadpoles have been observed in the stream 0.02 miles to the north.

Proposed activities are expected to produce additional short term siltation within the stream and disturb adjacent soils and potential cover for these species. A limited short term reduction in the canopy is expected to reduce the shade within the riparian zone, thus slightly drying and warming that area until newly planted trees are established. The reduction in canopy will not exceed limits that cause instream temperature increases.

Once completed, siltation would subside while adjacent terrestrial habitat would recover. The addition of coarse wood and smaller materials would be expected to provide habitat and forage sources for an array of aquatic dependant species, including the tailed frog. The small increase in sunlight, which may slightly alter temperature and moisture regimes within the project area, would also boost primary production within the stream. This production would be of direct benefit to surviving tailed frogs and to new individuals entering the area. Over the long term, the enhanced complexity of the riparian area and large mature conifers should provide excellent habitat for this declining species.

### Other Wildlife

Periodically during the project, there would be substantial audio disturbance due to use of heavy machinery and other human activity. This would cause many species to avoid the area during that period. As previously mentioned, expected recovery of this area would greatly benefit species associated with this environment.

### Botany - Survey and Manage Lichens

*Ramalina thruasta* occurs on the edge of the tree farm area, and in adjacent old-growth outside the project area. A buffer has been put around the sites to protect the trees from being cut down. Future thinning or replacement of the stand may improve this area as habitat for the lichen. Larger trees are better habitat for *Ramalina thruasta*. As this is a small area and the site would be maintained, there will be no cumulative effects of the proposed action.

*Cetrelia cetrarioides* occurs in section 27 in a stand of older alders. The alders are nearing the end of their life and are starting to rot and fall over. Protect the tree it grows on from direct disturbance. To allow for recruitment of new substrate, create gaps for new alders to grow. As the removal of trees will create small gaps that mimic natural gaps there will be no effects from the proposed action.

*Plastismatia lacunosa* Occurs in section 27 in older alders on the bank of Greenleaf Creek. The alders are nearing the end of their life and are starting to rot and fall over. To maintain the species in the stand, recruitment of new alders are needed here. Creating gaps by removing an occasional alder would allow the growth of new alders. Effort would be made to not remove any trees known to have *Plastismatia* growing on them. These trees would provide inoculum to the new alders and maintain the species in this area.

### ISSUE 3: Effects on Attainment of Late-Successional and Riparian Reserve Objectives

The proposed action of releasing conifers and thinning competing vegetation in project stream reaches would help to increase individual tree growth rates, provide the opportunity for establishment of tree species diversity, would increase the amount of coarse woody debris and help with establishing canopy layering. The planting of conifers in surveyed project reaches that are lacking in potential recruitable LWD would help to meet this need even though it will take decades before these planting are useful as LWD.

The proposed action of thinning red alder and replanting of conifer in riparian reserve project areas lacking in potential coniferous LWD would initially reduce the number of potential alder snags, increase the amount of coarse woody debris down on the riparian floor and in the stream channel, and increase the speed at which brush species grow. As a result of the accelerated competition between brush species and newly planted conifers, the treated areas would need to be brushed until the conifer plantings released above the brush canopy. Accelerating the development of riparian reserve conifer stands as a result of the Proposed Action would ultimately improve the landscape features needed to protect the aquatic systems.

ISSUE 4: Effects of the proposed culvert removals in road 16-8-35 on neighboring private land owners.

The JHC has Reciprocal Road Use and Right of Way Agreement (E-806) rights to the 16-8-35 road. If the culvert removal proposal were agreed upon by the BLM and JHC, the culverts removed and the in channel passage mitigation completed and the JHC decided afterward that they needed future access to their property, the cost of replacing passage at these locations would fall on the JHC under the Right of Way Agreement. The loss of access to private property here could have a negative affect on property value. If the JHC exercised their Right of Way rights and wished to maintain access to their holdings then the responsibility of passage for aquatic species at these barrier locations would fall on the BLM.

The proposed replacement of pipe numbers 1-3 would temporarily restrict access to private holdings in T16S, R8W, Sections 26 and 34.

#### **D. ALTERNATIVE 2 - Restoration with No Removal of Culverts Two and Three**

ISSUE 1: Effects on Attainment of ACS Objectives

Alternative 2 includes management within the Riparian Reserves similar to the Proposed Action and would have similar effects on most of the ACS Objectives. However, attainment of Objective 2 would not be achieved because the obstructions (culverts 1 and 2) would continue to prevent upstream migration of most aquatic species unless the BLM replaced the barriers with aquatic species friendly passage and appropriate instream mitigation.

ISSUE 2: Effects to Special Status Species

Effects to wildlife under this alternative would be expected to be the same as in the Proposed Alternative. Audio disturbance impacts to spotted owls and murrelets would be reduced as a result of this alternative.

Effects to Survey and Manage Lichens would be the same as the Proposed Action since there were no lichens found in the culvert project areas.

ISSUE 3: Effects on Attainment of Late-Successional and Riparian Reserve Objectives  
Alternative 2 is expected to have the same effects on LSR and Riparian Reserve vegetative objectives as the proposed alternative.

ISSUE 4: Effects of the proposed culvert removals in road 16-8-35 on neighboring private land owners.

The proposed replacement of pipe number 1 would temporarily restrict access to private holdings in T16S, R8W, Section 34.

Not removing barrier culverts 2 and 3 would have no affect on neighboring land owners. If culverts 2 and 3 were replaced with aquatic species friendly passage and appropriate instream mitigation then access to private holdings would be temporarily restricted during removal and replacement operations.

#### **F. ALTERNATIVE 3 - No Action Alternative**

Under a No Action Alternative, no additional actions would be taken to increase stream structure, replace barrier culverts, restore riparian areas or stabilize roads. Culvert and road work already occur as part of the district road maintenance program. However, the emphasis would be on road stability and not on assisting with recovery of the aquatic system and its associated fauna. Under the No Action alternative, no stream channel restoration would be done, and riparian restoration would be primarily associated with vegetation manipulation carried out for other purposes. Both the stream and riparian habitats would be expected to show only very gradual recovery over a much longer period of time as a result of management actions taken under this alternative. Under the No Action alternative, there would be no effect on adjacent private lands. Barrier culverts would continue to block migration routes of Sensitive Species like coho salmon and other aquatic species under this alternative.

### **VI. MITIGATING MEASURES**

The following mitigating measures have been identified:

1. Guidelines established for timing of stream enhancement work by the Oregon Department of Fish and Wildlife (ODFW) would be adopted. Changes to the guidelines would be in concurrence with BLM and ODFW.
2. To prevent the further spread of noxious weeds, cleaning of heavy equipment would be required prior to entering project areas.
3. Roading of heavy equipment would be kept to a minimum in project areas to prevent the spread of noxious weeds.
4. At project sites retain as much coarse woody material (including stumps) as possible.
5. If funding is available, Scot's broom and/or non-native blackberry (Himalayan and evergreen) and Japanese knot weed plants would be pulled within project areas prior to equipment move-in (at road closure projects) and in the year after project implementation to prevent further spread.

6. To help maintain the existing native plant communities, roadsides would be seeded as needed with native species mixtures. If native seed is not available and seeding is necessary for erosion control, an annual (70%) and perennial (30%) rye mixture would be used with strict guidelines on seed purity.
7. All tree falling would occur away from BLM Special Status and Survey and Manage sites.
8. No prescribed burning, tree planting, salvage logging, or other human disturbances would occur in BLM Special Status and Survey and Manage sites.
9. *Ramalina thrausta* sites be protected by a one site tree buffer around them or as indicated by the botanist. *Cetrelia cetrariodes*, a 60' buffer around the site, and *Plastismatia lacunosa*, a one site tree buffer around known sites.
10. When working in or next to the stream channel spill kits and an approved spill containment plan would be included in operations.
11. To reduce the potential for introduction of silt or petroleum products, when stream depth and channel conditions allow, use of a by-pass or retaining basin may be adopted.
12. Terms and conditions for riparian and instream work as described in the Programmatic Biological Assessment/Biological Opinion for the Oregon Coast Range Province as related to the Coastal Coho Evolutionarily Significant Unit (ESU) would be followed.
13. For Fiscal Year 2004 or later, projects in the Greenleaf Creek drainage (culvert replacements) all exposed sites would be hydro-mulched. Native or sterile straw bales (or an excepted substitute) would be used for erosion controls as directed by the contracting officer.
14. Petroleum products, chemicals, or other deleterious materials would be prevented from entering the stream. No fresh concrete would come in contact with the active flowing stream (if used in culvert installation).
15. As stated in the special conditions section of Fill Permit No. FP-23692 :  
Turbidity shall not exceed 10% above natural stream turbidities as a result of the project. The turbidity standard may be exceeded for a limited duration, (per OAR 340-41) provided all practicable erosion control measures have been implemented as applicable, including, but not limited to:
  - use of filter bags, sediment fences, silt curtains, leave strips or berms, or other measures sufficient to prevent offsite movement of soil;
  - use of an impervious material to cover stockpiles when unattended or during a rain event;
  - graveled construction accesses to prevent movement of material offsite via construction vehicles;
  - sediment traps or catch basins to settle out solids prior to water entering ditches or waterways;
  - and

-erosion control measures shall be maintained as necessary to ensure their continued effectiveness, until soils become stabilized.

16. Activities associated with projects within 0.25 miles of suitable murrelet habitat would not begin until 2 hours after sunrise and shall end 2 hours before sunset. This restriction would be in effect from April 1 through September 15.

17. When possible, to avoid disrupting deep stream channel substrates during placement of LWD and boulders utilize heavy equipment with an articulating head that will allow for placements from one location adjacent to the project area. Heavy equipment with a bucket and thumb set up or similar device, that can not effectively place materials from outside the stream channel (when deep gravel habitats are present ) should be prohibited.

## **VII. CRITICAL HABITAT**

Greenleaf Creek is critical habitat for the Oregon Coast coho salmon. Determination of effects for critical habitat are the same as the determination of effects for restoration activities under the Programmatic Biological Assessment and Biological Opinion, and are covered by the same biological assessment and biological opinion dated June 4, 1999 and extended on December 21, 2001 (OSB2001-0217-PC-RI).

This proposed restoration project would be expected to enhance desired elements of Critical Habitat of the northern spotted owl and the marbled murrelet in the long term.

## **VIII. ESSENTIAL FISH HABITAT**

Programmatic Consultation has been completed for Essential Fish Habitat in the Lake Creek drainage for Oregon Coast Coho Salmon and Oregon Coast Chinook Salmon dated July 2, 2001 (OSB2001-0070-IEC).

Coho salmon use Greenleaf Creek for migration, spawning and rearing. The proposed project is in the ESU for the federally-listed threatened Coastal coho salmon. Coho salmon use here and in the Lake Creek basin has declined due to a reduction in available spawning and rearing habitat and habitat disconnection caused by undersized barrier culverts. Chinook salmon use the lower stream reaches of Greenleaf Creek for migration and spawning. Available spawning habitat has been reduced for chinook due to reduced levels of large woody debris that retain spawning substrates.

## **IX. MONITORING AND EVALUATION**

Prior to implementation of instream project work a photographic and descriptive record is made of existing habitats in project areas. Pre project inventories are generally conducted in proposed enhancement reaches by BLM, but have been completed in 1999 by the ODFW (a cooperator/contractor). When possible, project locations are identified using Global Positioning System (GPS). Collected GPS data is then added to the District GIS data system. Pre-work sampling to estimate current juvenile salmonid and other fish species populations is conducted in selected habitats using seining/electrofishing and/or snorkeling. For project areas used by anadromous

salmonids, spawning counts conducted for up to 15 years provide a baseline for pre- and post-project comparison. Post project photographs are taken to show completed work and adjacent habitat prior to exposure to stream flow extremes. Successive photos are taken to document changes in project stability and effects on adjoining riparian and stream habitats. Spawning ground counts are continued in established index areas. Juvenile sampling, using snorkeling and electrofishing, is used to document use of structures. Information is also generally collected on non salmonid fish species both before and after project work. Reference macroinvertebrate samples may be collected at some project sites. Tree survival and growth are documented in riparian restoration areas during at least the first five years following planting. Disturbance areas are monitored for invasive non-native plant species.

## **X. CONSULTATION AND COORDINATION**

### **A. LIST OF CONTRIBUTORS**

The following Bureau of Land Management specialists have examined the Proposed Action and have provided either written or verbal input in this assessment:

Neil Armantrout	BLM Fisheries Biologist/Senior Staff Specialist
Graham Armstrong	BLM Hydrologist
Karin Baitis	BLM Soil Scientist
Dan Crannell	BLM Wildlife Biologist
Gary Hoppe	BLM Landscape Planner
Cheshire Mayrsohn	BLM Botanist
Eric Meyers	BLM Civil Engineering Technician
Sandra Miles	BLM Recreation Planner
Phil Redlinger	BLM Silviculturist
Mike Southard	BLM Archeology/Senior Staff Specialist
Mark Stephen	BLM Forest Ecologist

### **B. CONSULTATION AND COORDINATION**

#### **1. Private Lands and Roads**

Personal communications were conducted with adjoining private land owners with regard to proposed restoration activities and issues that could possibly affect private resources.

#### **2. Sensitive/Threatened Species.** BLM has completed an inventory of resident and anadromous fish species on Federal lands within the project area that are classified as threatened or candidates for listing under the Endangered Species Act.

Project areas have been surveyed for Special Status and Survey and Manage species (categories A and C) using current protocols. In the event a Special Status or Survey and Manage species is found during the implementation of the restoration project, the appropriate mitigation or project modifications would occur.

On September 20, 2001, the “individual tree” survey method was conducted for the presence of red tree voles (rtv). Four confirmed nests were located in proposed project areas and will be protected as required by current management recommendations.

## WILDLIFE

The Programmatic Biological Assessment addressing disturbance and this proposal related to Federally listed or proposed terrestrial animals was submitted to U.S. Fish and Wildlife Service (USFWS) on December 15, 2000. Because of the potential for audio disturbance to marbled murrelets and spotted owls during the critical nesting period, this proposed action “May Affect” these species. If the Proposed Action is conducted after August 5, 2002 the proposal would “Not Likely Adversely Affect (NLAA)” both the spotted owl and the marbled murrelet, and if the project occurs between July 7 and August 5, 2002 the call would be NLAA for the owl, but still Likely to Adversely Affect for the murrelet. The USFWS response, in the form of a Biological Opinion, is expected prior to on ground work. This action would not take place prior to the issuance of this Opinion. Activities associated with projects within 0.25 miles of suitable murrelet habitat would not begin until 2 hours after sunrise and shall end 2 hours before sunset. Any additional mitigation measures required in this BO would be followed.

## COHO

The proposed actions are consistent with the description and terms and conditions under the Programmatic Biological Assessment and Biological Opinion for Ongoing USDA Forest Service and USDI Bureau of Land Management Activities Affecting Oregon Coast Range Province, Oregon for the Oregon Coast coho salmon and designated “Critical Habitat” issued by the National Marine Fisheries Service (NMFS) - June 4, 1999 and extended on December 21, 2001 (OSB2001-0217-PC-RI).

3. Cultural Resources. No cultural resources have been identified to date in the actual project locations. All required cultural resource reviews have been completed. The Greenleaf Creek project is within the Oregon Coast Range physiographic province and the terms of Protocol D as defined in the National Programmatic Agreement in Oregon (USDI, 1998) apply.
4. Wild and Scenic Rivers. In the 1995 Eugene District Resource Management Plan (RMP) portions of the Siuslaw River were found as eligible for designation under the Wild and Scenic Rivers Act. The primary outstanding resource values were anadromous fisheries, wildlife and recreation. The proposed action project areas in Greenleaf Creek are not located in designated Wild and Scenic Rivers areas within the Siuslaw River Basin.
5. Navigability. Greenleaf Creek and its tributaries are not recognized by BLM as navigable.
6. State and County Land Use. Aquatic and riparian habitat restoration was found in the District RMP to be compatible with existing State and County land use laws. The proposed actions are compatible with the Coastal Zone Management plans and goals.

7. Permits. All required permits will be obtained prior to the beginning of project work. The majority of restoration activities will require only ODFW and State Lands waiver permits. Some of the structures may exceed 50 cubic yards of fill and will require permitting through the State Lands-Corps of Engineers excavation and fill permitting process. The proposed project work is covered by State Lands permit, FP-23692, issued on June 19, 2001.

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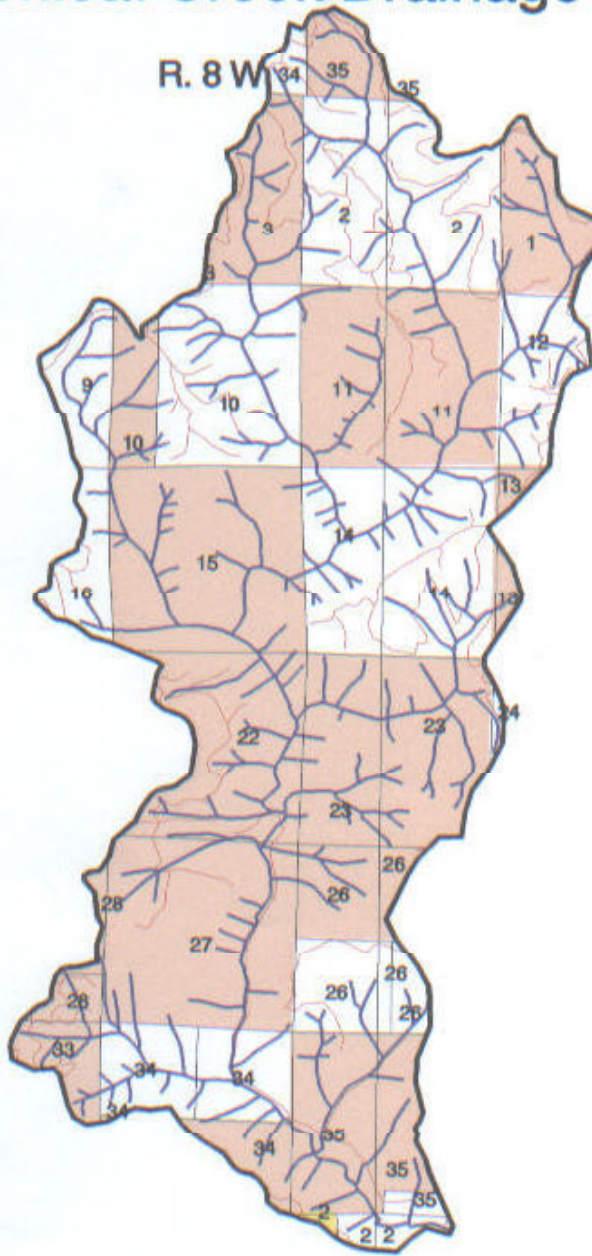
## **APPENDIX**







# Stream Enhancement Projects Greenleaf Creek Drainage

T. 16 S.

R. 8 W.



-  Late Successional Reserve
-  roads
-  streams
-  drainage boundary

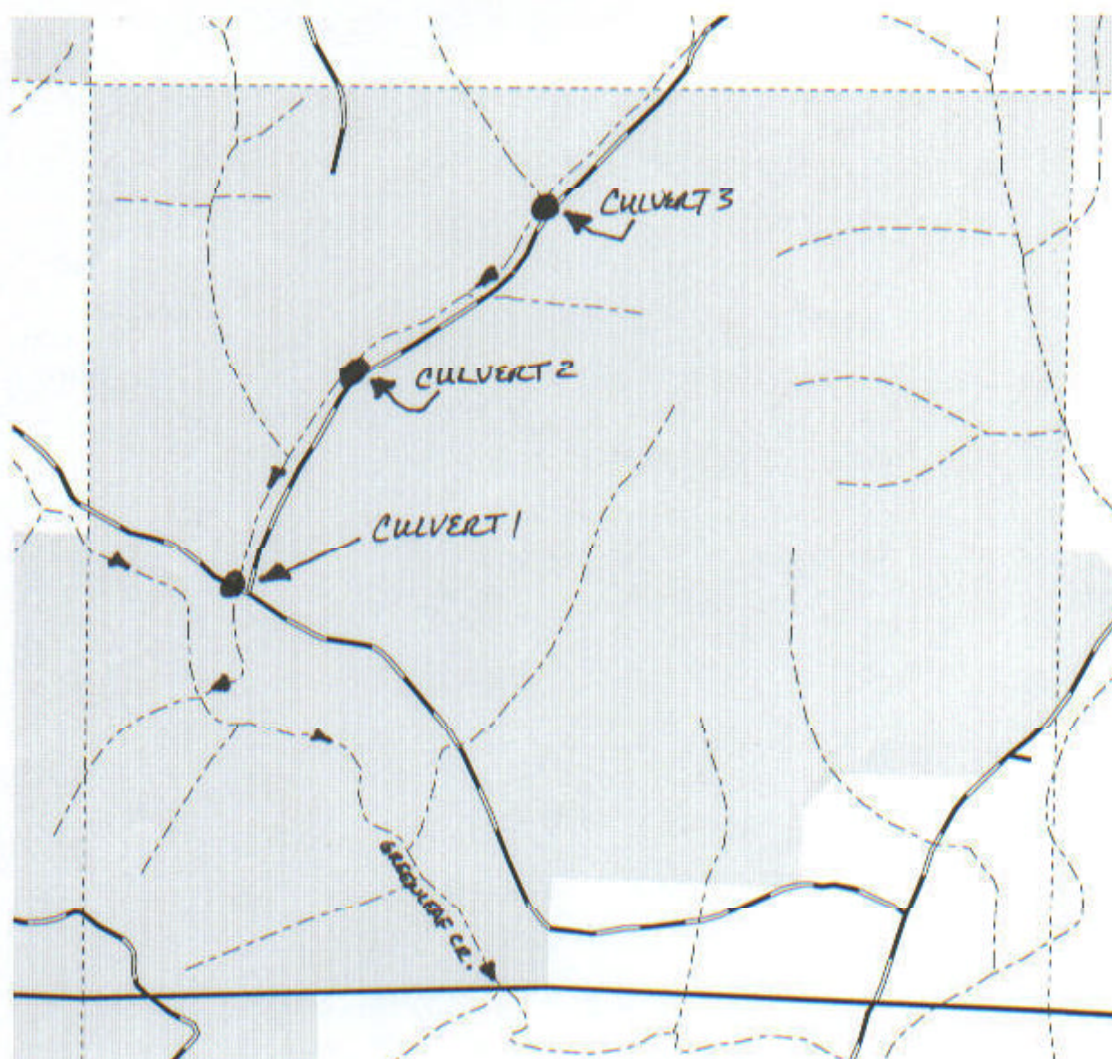
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No warranty is made by the B.L.M for the use of this data not intended by B.L.M

03/19/02

aml file - /home/gwilkins/greensmall.aml

MAP 1



BLM  
Streams  
Roads

## Greenleaf Cr. Culvert Project1

T.16S, R.08W. Sec. 35

Scale 1:12000  
1000 0 1000 2000  
Feet



MAP 2



BLM  
Streams  
Roads

## Greenleaf Creek

PROJECT NUMBERS AND APPROXIMATE LOCATIONS

T.16S, R.08W. Sec. 35

Contour Interval: 500 Ft

Scale 1:12000  
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Feet



MAP 3



BLM  
Streams  
Roads

## Greenleaf Creek

PROJECT NUMBERS AND APPROXIMATE LOCATIONS

T.16S, R.08W. Sec. 27

Contour Interval: 500 Ft

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Feet



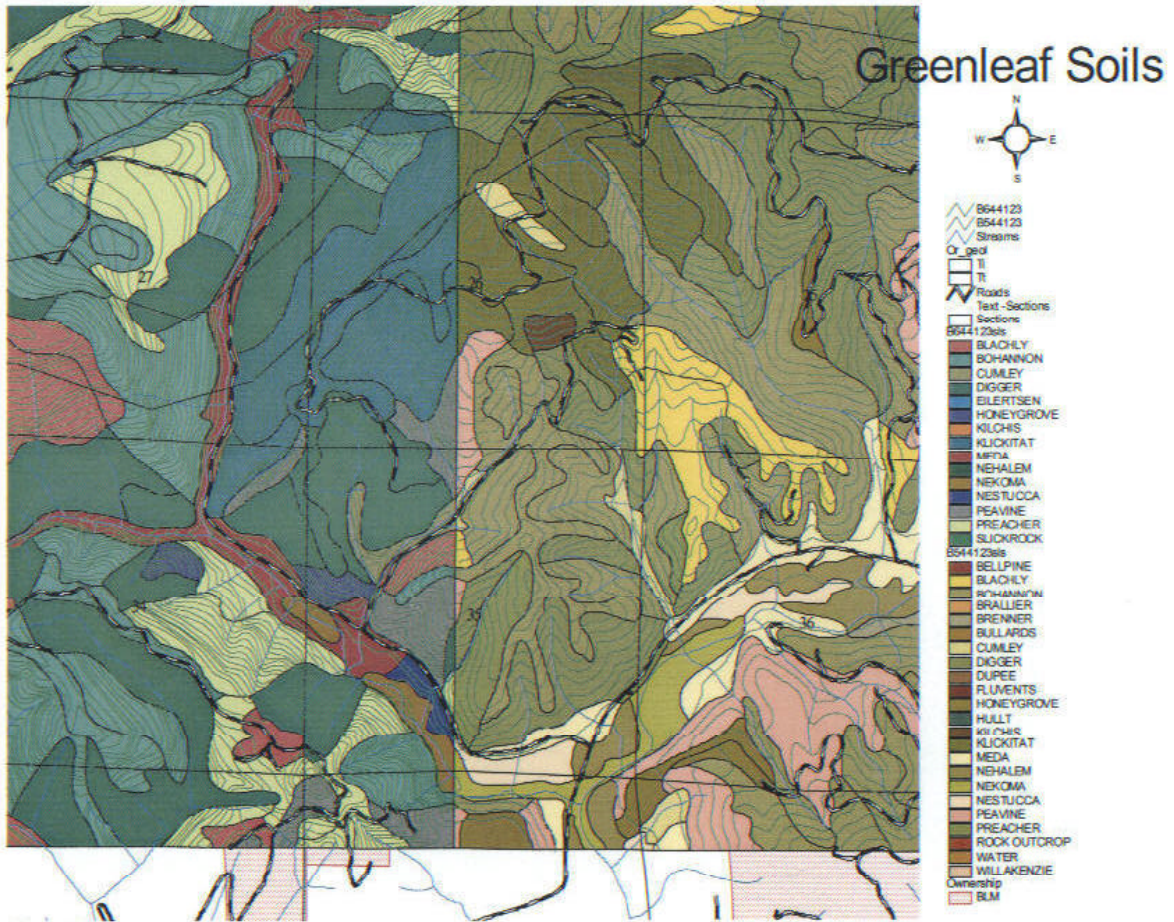






Photo 1 - Greenleaf Creek Unnamed Tributary  
Culvert #1 Effluent View



Photo 2 - Greenleaf Creek Unnamed Tributary  
Culvert #2 Influent View



Photo 2 - Greenleaf Creek Unnamed Tributary  
Culvert #2 Influent View



Photo 3 - Greenleaf Creek Unnamed Tributary  
Culvert #2 Effluent View



Photo 4 - Greenleaf Creek Unnamed Tributary  
Culvert #2 Influent View



Photo 5 - Greenleaf Creek Unnamed Tributary  
Culvert #3 Effluent View



Photo 6 - Greenleaf Creek Unnamed Tributary  
Culvert #3 Influent View

**UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
EUGENE DISTRICT OFFICE**

Preliminary  
Finding of No Significant Impact  
for

GREENLEAF CREEK AQUATIC HABITAT IMPROVEMENT PROJECT  
ENVIRONMENTAL ASSESSMENT No. OR090-EA-02-13

Determination:

On the basis of the information contained in the Environmental Assessment, and all other information available to me, it is my determination that implementation of the proposed action or alternatives will not have significant environmental impacts beyond those already addressed in the *Record of Decision (ROD) for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (April 1994), and the *Eugene District Record of Decision and Resource Management Plan* (June 1995) as amended by the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines, USDA Forest Service and USDI Bureau of Land Management January 2001*, with which this EA is in conformance, and does not, in and of itself, constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.